

Method:

(a) Water was added to an Osterizer(r) mixer and agitated at the slowest speed. (b) The minerals were then added as the agitation continued. (c) After approximately 1 minute the lactic acid was slowly added, over a period of about 5 minutes. (d) The mixer was stopped and the solution allowed to stop swirling. At this point the solution was clear with a yellowish tinge. (e) The mixture was allowed to cool down to about 100°F. (f) It was then freeze-dried. (g) The dried material was broken into a powder and sieved.

EXAMPLE 2

A combination was made as described in Example 1, except that a complete flavor system was added at step (e) after the mixture cooled to a point that would not harm the ingredients. At a point of about 100°F, a flavor system comprising a color, citric acid (for flavor) and a sweetener were added. Instead of freeze drying, the mixture containing the flavor system was put into a form 1" x 6" with the top open and tray dried. Upon drying, the 1" x 6" piece had shrunk to about 2" x 5". This was cut into pieces that weighed about 2.7 grams each, which were in the form of "calcium/magnesium" lozenges. The high solubility created a unique tasting sensation that "dissolved smoothly" in the mouth.

EXAMPLE 3

A combination is made as described in Example 1, except that a flavor system and a gum base are added at step (e) after mixing and before drying. The end product is a "calcium/magnesium" gum with an agreeable flavor.

EXAMPLE 4

Grape Juice is unique in that it naturally includes tartaric acid. Tartaric acid precipitates calcium. As a result, 100mg elemental calcium in 8 ounces is considered a high concentration for 100% grape juice. As a demonstration, powder compositions of Formula Examples A, B, C and D were separately mixed with 100% grape juice to provide a concentration 100 mg of elemental calcium in 8 ounces of 100% grape juice. The Formula Examples A, B, C and D of this invention precipitated out of the 100% grape juice within 30 days.

Formula Example F (see Example 6 below) was developed to keep the reconstituted calcium in solution. It contained calcium and magnesium mixed in phosphoric acid and dried according to the present invention. The resulting powder was added to 100% grape juice at an amount equal to 25% of the RDI (250mg), making a stable, crystal-free solution. Thus, by using a combination of more than one mineral in the process of this invention, one is able to obtain a long lasting solution of calcium (plus the other mineral(s)) in grape juice.

EXAMPLE 5

Formula Example O is a beverage mix of Formula Example A1 spray dried and mixed with other ingredients to make a beverage. Table 1 shows the stability of this composition.

EXAMPLE 6

The following formulas are examples of compositions of the present invention. These are the original components that are processed to produce the products of this invention. This list is not intended to be comprehensive, but rather illustrative.

Formula Example A1: 30% solids

Ingredient	Weight in Grams	% of Mixture
Calcium Hydroxide	49.40	4.94%
Magnesium Oxide	17.70	1.77%
Lactic Acid (88%) USP	262.10	26.21%
Water	670.80	67.08%
TOTAL	1000.00	100.00%

Formula Example A2: 50% solids

Ingredient	Weight in Grams	% of Mixture
Calcium Hydroxide	83.84	8.38%
Magnesium Oxide	30.04	3.00%
Lactic Acid (88%) USP	444.84	44.48%
Water	441.29	44.14%
TOTAL	1000.00	100.00%

Formula Example B:

Ingredient	Weight in Grams	% of Mixture
Calcium Carbonate	78.21	8.69%
Lactic Acid (88%) USP	195.66	21.74%
Water	626.13	69.57%
TOTAL	900.00	100.00%

Formula Example C:

Ingredient	Weight in Grams	% of Mixture
Calcium Hydroxide	26.66	6.53%
Magnesium Carbonate	8.49	2.08%
Lactic Acid (88%) USP	88.83	21.76%
Water	284.26	69.63%
TOTAL	408.24	100.00%

Formula Example D:

Ingredient	Weight in Grams	% of Mixture
Calcium Hydroxide	1,285.00	12.85%
Acetic Acid--Glacial	1,763.00	17.63%
Lactic Acid (88%) USP	554.00	5.54%
Water	6,398.00	63.98%
TOTAL	10,000.00	100.00%

Formula Example E:

Ingredient	Weight in Grams	% of Mixture
Calcium Hydroxide USP	50.0	4.42%
Sucralose	0.8	0.07%
Lactic Acid (88%) USP	157.3	13.89%
Water	670.80	81.62%
TOTAL	1000.00	100.00%

5 Formula Example F:

Ingredient	Weight in Grams	% of Mixture
Calcium Magnesium mix 5:2	84	8.4%
Phosphoric Acid	300	30.1%
Water	613	61.5%
TOTAL	997	100.0%

Formula Example G:

Ingredient	Weight in Grams	% of Mixture
Magnesium Oxide	63.5	7.82%
Citric Acid	135.0	16.64%
Water	613.0	75.54%
TOTAL	811.5	100.00%

Formula Example H:

Ingredient	Weight in Grams	% of Mixture
Potassium Carbonate	240	15%
Lactic Acid (88%) USP	720	75%
TOTAL	960	100%

Formula Example I:

Ingredient	Weight in Grams	% of Mixture
Potassium Carbonate	120.0	27.18%
Phosphoric Acid (75%)	200.0	45.30%
Citric Acid	45.0	10.19%
Water	76.5	17.73%
TOTAL	44.5	100.00%

Formula Example J:

Ingredient	Weight in Grams	% of Mixture
Magnesium Carbonate	18.4	3.67%
Potassium Carbonate	40.2	8.01%
Phosphoric Acid (75%)	170.46	33.98%
Water	272.6	54.34%
TOTAL	501.66	100.00%

5 Formula Example K:

Ingredient	Weight in Grams	% of Mixture
Calcium Hydroxide	5.00	3.97%
Ascorbic Acid	21.05	16.70%
Water	100.00	79.33%
TOTAL	1000.00	100.00%